Exam 1
Chris Potts, Ling 130a/230a: Introduction to semantics and pragmatics, Winter 2018
Distributed Feb 13; due Feb 15

Notes and reminders

• This is due on Feb 15, by 10:30 am. No late work will be accepted.
• You must submit your work electronically via Canvas.
• No collaboration of any kind is permitted. You are, though, free to use your notes and any other reference materials you like.
• Please submit questions via Canvas or to the staff address: linguist130a-win1718-staff@lists.stanford.edu. Questions sent to individual instructors probably won’t be answered.

1 Functional application

Reduce the following expressions by applying the necessary application and substitution steps. You should reduce the expressions as far as is possible, including subexpressions.

i. \( (\lambda x(x > x))(5) \)

ii. \( (\lambda x(\lambda y((y + x) > x)))(4) \)

iii. \( (\lambda f(\lambda x(5 < f(x))))(\lambda y(y + 1)) \)

2 A (non-existent) non-conservative determiner

Consider the hypothetical quantificational determiner \( \text{llarof} \):

\[
[\text{llarof}] = \{ \langle A, B \rangle : B \subseteq A \}
\]

Thus, \( \text{llarof} \) \text{ hippos skateboard} \) would be true just in case the set of hippos was a superset of the set of skateboarders. Show that this hypothetical determiner is not conservative. To do this, you just need to find a counterexample — sets \( A \) and \( B \) that fail the conservativity test when given as arguments to \([\text{llarof}]\) — and explain why those sets constitute a counterexample.

3 Monotonicity

Here is our usual definition of the quantificational determiner \([\text{most}]\):

\[
[\text{most}] = \left\{ \langle A, B \rangle : \frac{|A \cap B|}{|A|} > \frac{1}{2} \right\}
\]

\[
= \left\{ \langle A, B \rangle : |A \cap B| > |A - B| \right\}
\]
Diagnose the first (restriction) argument as upward, downward, or nonmonotone, and explain why this holds using \([most]\). (Note: this isn’t a question about your intuitions, but rather about what we are predicting with \([most]\).)

Recall that a determiner \(D\) is downward monotone on its first argument if \(D(A)(B)\) entails \(D(X)(B)\) for all \(X \subseteq A\), and that \(D\) is upward monotone on its first argument if \(D(A)(B)\) entails \(D(X)(B)\) for all \(A \subseteq X\). If neither of these entailments holds, then \(D\) is nonmonotone on its first argument.

4 Functional quantifier

Give a functional denotation for the quantificational determiner \(\text{more than four}\). (For examples of such denotations, see section 5.7 of the ‘Semantic composition’ handout.)

5 Compositional analysis

For each of the top (root) nodes in the following trees, provide (i) the name of the rule you used to derive that meaning from its constituent parts, according to the handout ‘Semantic composition’, and (ii) the meaning itself after all the allowable substitutions from functional applications. Thus, for example, given the tree on the left, the answer at right would be complete and accurate:

\[
\begin{align*}
\text{VP} & \quad \text{Rule (TV) derives } \lambda x \left( \text{T if } (x, a, b) \in \{ (a, b) : a \text{ loves } b \}, \text{ else } F \right)
\end{align*}
\]

5.1

\[
\begin{align*}
\text{QP} & \quad \text{D} \quad \text{NP} \\
& \quad \text{most} \quad \text{N} \\
& \quad \text{students}
\end{align*}
\]

5.2

\[
\begin{align*}
\text{VP} & \quad \text{not} \quad \text{VP} \\
& \quad \text{V} \\
& \quad \text{skateboards}
\end{align*}
\]
5.3

\[
\begin{array}{c}
\text{PN} \\
\text{Homer}
\end{array}
\]

5.4

\[
S \\
\text{QP} \quad \text{VP} \\
\text{D} \quad \text{NP} \quad \text{not} \quad \text{VP} \\
\text{every} \quad \text{N} \quad \text{V} \\
\text{parent} \quad \text{skateboards}
\]

5.5

\[
\begin{array}{c}
\text{NP} \\
\text{AP} \quad \text{NP} \\
\text{A} \quad \text{N} \\
\text{alleged} \quad \text{student}
\end{array}
\]

6 Quantifiers, entailments, and implicatures [2 points]

A classic Gricean argument is that \textit{most} is semantically consistent with \textit{every} but tends to exclude it pragmatically because of a quality–quantity interaction. This argument depends on the semantic claim that \textit{every} entails \textit{most}. Your task is to support this claim, assuming the following set-theoretic meanings (your argument will carry over immediately to the functional view):

- \([\text{most}] = \{ (A, B) : \frac{|A \cap B|}{|A|} > \frac{1}{2} \} = \{ (A, B) : |A \cap B| > |A - B| \}
- \([\text{every}] = \{ (A, B) : A \subseteq B \}

In this context, a determiner meaning \(D_1\) entails another determiner \(D_2\) if and only if \([D_1] \subseteq [D_2]\). Thus, your task is simply to show that \([\text{every}] \subseteq [\text{most}]\). \textbf{Assume throughout that the first argument to the determiner (the set \(A\) in the above) is non-empty.}
7 Where ever can appear [2 points]

The English adverbial particle ever has a highly restricted distribution. On the basis of the following examples (where * marks ungrammatical cases, as usual), formulate a generalization in terms of the monotonicity properties of determiners about where ever can appear:

(7) a. No [NP students who have ever taken semantics] [VP have been to Peru]
   b. No [NP students] [VP have ever been to Peru]
   c. *Some [NP students who have ever taken semantics] [VP have been to Peru]
   d. *Some [NP students] [VP have ever been to Peru]
   e. At most three [NP students who have ever taken semantics] [VP have been to Peru]
   f. At most three [NP students] [VP have ever been to Peru]
   g. Exactly three [NP students who have ever taken semantics] [VP have been to Peru]
   h. Exactly three [NP students] [VP have ever been to Peru]
   i. Every [NP student who has ever taken semantics] [VP has been to Peru]
   j. *Every [NP student] [VP has ever been to Peru]

Please restrict your attention to this set of examples when formulating your generalization.

Note: I’ve used square bracketing to indicate the basic syntactic structure of these cases. In all cases, the string inside [NP …] corresponds to the restriction of the determiner semantically, and the string inside [VP …] corresponds to the scope of the determiner semantically.

8 Tautologies [2 points]

Suppose that [S] is always true – a tautology. Uttering S would likely incur many maxim violations. Which maxim would definitely not be violated with such an utterance, and why? (1–2 sentences.)

9 Optional extra credit: PNs as quantifiers [up to 2 points]

In our current semantic grammar, the VP meaning applies to the subject meaning when the subject is a PN, whereas the VP meaning is the argument of the subject meaning when the subject is a QP. Some people find this mixed directionality unsatisfying. The simplest way to address it is to raise the type of PNs so that they take VP meanings as arguments, which makes them QPs (and allows us to use rule Q2 with them). Your task: describe such a quantificational meaning for the proper name Lisa. Your meaning should deliver truth conditions that are identical to the ones we obtain in the current grammar, and it should immediately generalize to other PNs.